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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,573	06/02/2006	Nam-Seok Roh	PNK-0337	4907
23413 7590 03/04/2009 CANTOR COLBURN, LLP 20 Church Street 22nd Floor Hartford, CT 06103				
EXAMINER RAINEY, ROBERT R				
ART UNIT 2629		PAPER NUMBER		
NOTIFICATION DATE 03/04/2009		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

Office Action Summary

Application No.

10/581,573

Applicant(s)

ROH ET AL.

Examiner

ROBERT R. RAINEY

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
4a) Of the above claim(s) 2-4 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1 and 5-14 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 02 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 8/9/07; 6/2/06
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 2-4 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10/22/2008. The traversal is on the ground(s) that both species have first color sub-pixels and second color sub-pixels in common. (Examiner assumes that applicant is referring not just to two different color pixels but to the inclusion of pixels from two different sets of primary colors.) This is not found persuasive because in order for the election requirement to be improper the common features must be "special technical features" or features not found in the prior art. This is not the case since no generic claim was found to be allowable.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 5 and 9** rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the first, second and third "sets of subpixels". There is insufficient antecedent basis for this limitation in the claim. Note, examiner

believes that applicant inadvertently switched terminology from "pairs of subpixels" to "sets of subpixels" and will read "sets of subpixels" to mean the claimed "pairs of subpixels" in the art rejections below.

Claim 9 states that the first-color subpixels include red, green, and blue subpixels. It is unclear how a first-color can be more than one color. Claim 9 also states that the second-color subpixels include cyan, magenta, and yellow subpixels. It is unclear how a second-color can be more than one color.

Double Patenting

4. Claims 1, 5, and 11 of this application conflict with claim 33 of Application No. 11/565285. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thornton*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1, and 5-14, provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 33-35 of copending Application No. 11/565285. Although the conflicting claims are not identical, they are not patentably distinct from each other because the same subpixel pattern underlays them as is evident by comparing Figures 6 and 7 of the instant application with Figures 23 and 24 of 11/565285 and even though the claims of the instant application mention six different colors they do not require them to be used and the instant application includes white as a complementary color. Claim 9, for example, doesn't require that all the colors be used, only that red or green or blue be used somewhere and that cyan or magenta or yellow be used somewhere. Since the use of pixels with at least 4 to 7 colors was known, reference for example Sunohara, 5,587,819, which teaches CMYW, CMYRBW, RGBYW, CMYRBW, RGBMYW, RBGCIYW, and RBGCIYW, it would have been obvious to substitute a C, M, or Y pixel for one of those claimed in 11/565285.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claims 1, and 5-14 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,888,604. Although the conflicting claims are not identical, they are not patentably distinct from each other because the same subpixel pattern underlays them as is evident by comparing Figures 6 and 7 of the instant application with Figures 23 and 24 of 6,888,604 and even though the claims of the instant application mention six different colors they do not require them to be used and the instant application includes white as a complementary color. Claim 9, for example, doesn't require that all the colors be used, only that red or green or blue be used somewhere and that cyan or magenta or yellow be used somewhere. Since the use of pixels with at least 4 to 7 colors was known, reference for example Sunohara, 5,587,819, which teaches CMYW, CMYRBW, RGBYW, CMYRBW, RGBMYW, RBGCIW, and RBGCIW, it would have been obvious to substitute a C, M, or Y pixel for one of those claimed in 6,888,604.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application

by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

9. **Claims 1, 5 and 11** rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2008/0192178 to *Ben-David et al.* ("*Ben-David*").

As to **claim 1**, *Ben-David* discloses a color display and in particular: A display device comprising: a plurality of pixels arranged in matrix (see for example Fig. 12A, which shows two pixels for example, one shaded and on unshaded), each pixel including a first set of three primary color subpixels and at least one of a second set of three primary color subpixels, wherein the first and the second sets of three primary colors have a complementary relation (see for example Fig. 12A, the unshaded six subpixels with first color set being RGB and the second color set being CMY; that the colors are used together in a pixel indicates that they have a complementary relation).

As to **claim 5**, *Ben-David* discloses a color display and in particular: A display device comprising: a plurality of pixels arranged in matrix (see for example Fig. 12A, which shows two pixels for example, one shaded and on unshaded), each pixel including first to third pairs of subpixels, wherein the first pair of subpixels are disposed adjacent to each other (see for example subpixels labeled "G" and "M"), the second (see for example subpixels labeled "R" and "C") and the third sets of subpixels (see for example subpixels labeled "B" and "Y") are disposed opposite each other with respect to the first pair of subpixels (note

that the second and third subpixel sets are on opposite sides of the first set), and the first to the third sets of subpixels include first-color subpixels and second-color subpixels (note that six colors are shown so the requirement that two colors are used is met; as an aid to further prosecution examiner notes that the art cited would also read on a claim that required that each of the first to third subpixel pairs included one first-color subpixel and one second-color subpixel).

As to **claim 11**, *Ben-David* discloses a color display and in particular: A display device comprising: a matrix of pixels (see for example Fig. 12A, which shows two pixels for example, one shaded and one unshaded), each pixel including a pair of central subpixels (see for example subpixels labeled "G" and "M") adjacent to each other, a pair of first subpixels (see for example subpixels labeled "R" and "C"), and a pair of second subpixels (see for example subpixels labeled "B" and "Y"), the pairs of first and second subpixels disposed in diagonals with respect to the central subpixels (see for example Fig. 12A noting that the subpixels labeled "R" and "Y" are diagonally disposed with respect to the central subpixels, as are the subpixels labeled "C" and "B"); a plurality of gate lines extending in a row direction and transmitting gate signals; and a plurality of data lines extending in a column direction and transmitting data signals, wherein each subpixel includes a pixel electrode and a thin film transistor (see for example [0003] especially "active-matrix technology"), the subpixels include first and second sets of three primary color subpixels (see for example Fig. 12A, the

unshaded six subpixels with first color set being RGB and the second color set being CMY), and the first and the second sets of three primary color subpixels have complementary relation (that the colors are used together in a pixel indicates that they have a complementary relation).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 6-10 and 12-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2008/0192178 to *Ben-David et al.* ("*Ben-David*") in view of U.S. Patent Application Publication No. 2005/0088385 to *Elliott et al.* ("*Elliott*").

As to **claim 6**, in addition to the rejection of claim 5 over *Ben-David*:

Ben-David does not expressly disclose that each subpixel in the first pair of subpixels is triangular, and the first pair of subpixels form a diamond.

Elliott discloses a subpixel rendering method and its use in with pixels of multiple known subpixel arrangements including two that are six-subpixel repeat cells (see for example Fig. 13 items 1320 and 1323 and [0098]); one of which has a row and column arrangement (see for example Fig. 13 item 1320) and one of which has six substantially triangular shaped segments with two of the

triangular shaped segments arranged to form a rectangular central section and the other for arranged proximate the sides of the central section in such a manner that the six segments combine to form a second substantially rectangular section, i.e. a "2-4" arrangement (see for example Fig. 13 item 1323); i.e. that each subpixel in the first pair of subpixels is triangular, and the first pair of subpixels form a diamond (see for example Fig. 13 item 1323, with the first pair of pixels being the two in the center forming a diamond).

Ben-David and *Elliott* are analogous art because they are from the same field of endeavor which is matrix displays.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to substitute the 2-4 arrangement for the row and column arrangement of *Ben-David*. The suggestion/motivation would have been to use an art recognized substitute ([0098] makes it clear that these are both known "six subpixel repeat cells").

As to **claim 7**, in addition to the rejection of claim 6 over *Ben-David* and *Elliott*, *Elliott* further discloses that a boundary between the first pair of subpixels extends in a row or column direction (see for example Fig. 13 item 1323).

As to **claim 8**, in addition to the rejection of claim 7 over *Ben-David* and *Elliott*, *Ben-David* further discloses that the first-color and the second-color subpixels have complementary relation (see for example Fig. 12A the fact that

the colors are used together in a pixel indicates that they have a complementary relation).

As to **claim 9**, in addition to the rejection of claim 8 over *Ben-David* and *Elliott*, *Ben-David* further discloses that the first-color subpixels include red green, and blue subpixels and the second-color subpixels include cyan, magenta, and yellow subpixels (see for example Fig. 12A, which shows pixels of all of the claimed colors).

As to **claim 10**, in addition to the rejection of claim 9 over *Ben-David* and *Elliott*, *Elliott* further discloses the replacement of one subpixel of a six subpixel repeat cell or pixel being replaced with a white element.

Ben-David and *Elliott* disclose the claimed invention except for the replaced subpixel being the M subpixel.

Since the prior art device offered only six choices of subpixel colors to replace – R, G, B, C, M or Y – one of ordinary skill in the art could have pursued the known potential solutions, replacements, with a reasonable expectation of success. (Note that, in order to further prosecution, this rejection is based on reading in limitations from the specification. There is nothing in the claim language that requires the use of all six claimed colors in the six subpixel repeat pattern. If there were such a requirement this claim would also be rejected for indefiniteness since claim 10 as depended from claim 9 would then require that

the six colors be RGBCMY and RGBCWY and the six colors cannot be both of these at once.)

As to **claim 12**, in addition to the rejection of claim 11 over *Ben-David*:

Ben-David does not expressly disclose that each of the central subpixels is isosceles triangular and the central subpixels form a diamond.

Elliott discloses a subpixel rendering method and its use in with pixels of multiple known subpixel arrangements including two that are six-subpixel repeat cells (see for example Fig. 13 items 1320 and 1323 and [0098]); one of which has a row and column arrangement (see for example Fig. 13 item 1320) and one of which has six substantially triangular shaped segments with two of the triangular shaped segments arranged to form a rectangular central section and the other for arranged proximate the sides of the central section in such a manner that the six segments combine to form a second substantially rectangular section, i.e. a "2-4" arrangement (see for example Fig. 13 item 1323); i.e. that each of the central subpixels is isosceles triangular and the central subpixels form a diamond (see for example Fig. 13 item 1323, with the first pair of pixels being the two in the center forming a diamond).

Ben-David and *Elliott* are analogous art because they are from the same field of endeavor which is matrix displays.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to substitute the 2-4 arrangement for the row and column

arrangement of *Ben-David*. The suggestion/motivation would have been to use an art recognized substitute ([0098] makes it clear that these are both known "six subpixel repeat cells").

As to **claim 13**, in addition to the rejection of claim 12 over *Ben-David* and *Elliott*, *Elliott* further discloses that a boundary between the central subpixels extends in a row or column direction (see for example Fig. 13 item 1323).

As to **claim 14**, in addition to the rejection of claim 13 over *Ben-David* and *Elliott*, the limitations that the first set of three primary color subpixels include red green, and blue subpixels, and the second set of three primary color subpixels include cyan, magenta, and yellow subpixels were already covered in the rejection of claim 11 since RGB = red, green, blue, and CMY = cyan, magenta, yellow.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT R. RAINEY whose telephone number is (571)270-3313. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RR/

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2629